

**NATIONAL TRANSPORTATION SAFETY BOARD
Office of Research and Engineering
Vehicle Recorder Division
Washington, D.C. 20594**



**GROUP CHAIRMAN'S FACTUAL REPORT OF INVESTIGATION
ADDENDUM 1**

DCA15MM017

By Doug Mansell

The reader of this report is cautioned that the transcript of a voyage data recorder audio recording is not a precise science, but is the best product possible from a Safety Board group investigative effort. The transcript, or parts thereof, if taken out of context, could be misleading. The transcript should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division

March 14, 2016

Voyage Data Recorder – Addendum 1

Group Chairman’s Factual Report – Addendum 1
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1. CONTENTS OF ADDENDUM

This addendum includes three significant elements:

- Engine order telegraph printouts from Conti Peridot (Attachment 4)
- Plots of data from Attachments 2 and 4 (Figures 10, 11, 12, and 13)
- Partial transcript of Conti Peridot audio, from about one hour prior to collision

1.1 Conti Peridot Engine Order Telegraph

The engine order telegraph (EOT) printer, located on the bridge, records the commanded and actual rotational speed of the propeller shaft, in revolutions per minute (RPM). Attachment 4 provides photographs of the EOT printer installed on the bridge, and select printouts of the recorded log, also known as the “bell log”, from Conti Peridot’s EOT printer on March 9, 2015.

The bell log and the voyage data recorder (VDR) have independent time sources. Though the bell log (Attachment 4) and VDR data (Attachment 2) are in general agreement with each other, a time offset must be applied to synchronize the data.

- The bell log setpoint of 97.4 RPM is logged 2 minutes and 30 seconds after the VDR logs the corresponding command of 97.4 RPM.
- The bell log setpoint of 87.3 RPM is logged 2 minutes and 27 seconds after the VDR logs the corresponding command of 87.3 RPM.
- The bell log setpoint of 100.3 RPM is logged 2 minutes and 29 seconds after the VDR logs the corresponding command of 104.9 RPM.

The bell log records RPM data infrequently. The VDR records RPM data once every few seconds. With a limited number of bell log entries available for time correlation, and without knowledge of the precise recording logic and timing delays associated with the EOT printer, the time offset for the bell log of Conti Peridot is estimated to be 2 minutes and 30 seconds.

1.2 Overlays, Plots and Corresponding Tabular Data

Selected parameters extracted from the VDR¹ of Conti Peridot (Attachment 2), and the bell log of Conti Peridot (Attachment 4), have been plotted. Table 5 identifies the parameters plotted in Figures 10 through 13.

Table 5. Plotted VDR and bell log parameters – Conti Peridot

Parameter Name	Units	Description	Source
RPM Command	RPM	Commanded propeller speed	VDR – XDC sentence
RPM	RPM	Actual propeller speed	VDR – XDC sentence
EOT set [†]	RPM	Commanded propeller speed	EOT Printer (bell log)
EOT actual [†]	RPM	Actual propeller speed	EOT Printer (bell log)
Rudder Sensor Angle	degrees	Sign Convention: - turning to port 0 midship + turning to starboard	VDR – RSA sentence
Rate of Turn	degrees per minute		VDR – ROT sentence
Heading	degrees true		VDR – HDT sentence
Longitudinal Water Speed	knots		VDR – VBW sentence

[†] Parameter only plotted in Figure 10; offset of -150 seconds applied for time correlation.

Figure 10 shows the selected parameters for the entire duration the pilot was aboard the Conti Peridot, until the collision with Carla Maersk. Symbols representing the EOT set and actual values from the bell log are overlaid on the plot of RPM parameters from the VDR. Accounting for separate time sources (bell log offset -150 seconds), the bell log and VDR data are generally consistent.

Figure 11 displays the selected parameters during the ten minutes immediately preceding the collision. At 12:29:19 CDT, the pilot of Conti Peridot commands hard starboard from midship. Between 12:29:22 CDT to 12:29:28 CDT, VDR data indicates rudder angle changes from 0.6 degrees to 32.3 degrees. At 12:29:30 CDT, the pilot of Conti Peridot commands a speed increase from half ahead to full ahead. From 12:29:30 CDT to 12:29:33 CDT, the VDR data indicates an increased command speed from 87.3 RPM to 104.9 RPM.

Figure 12 is the same plot as Figure 11, overlaid with selected excerpts of transcribed text from the pilot aboard Conti Peridot.

Figure 13 displays the selected parameters during the two minutes immediately preceding the collision, overlaid with selected excerpts of transcribed text from the pilot aboard Conti Peridot.

¹ VDRs receive data ‘sentences’ formatted according to National Marine Electronics Association (NMEA) and International Electrotechnical Commission (IEC) 61162 standards.

Figure 10. Conti Peridot parameters, day of accident, pilot boarding through collision

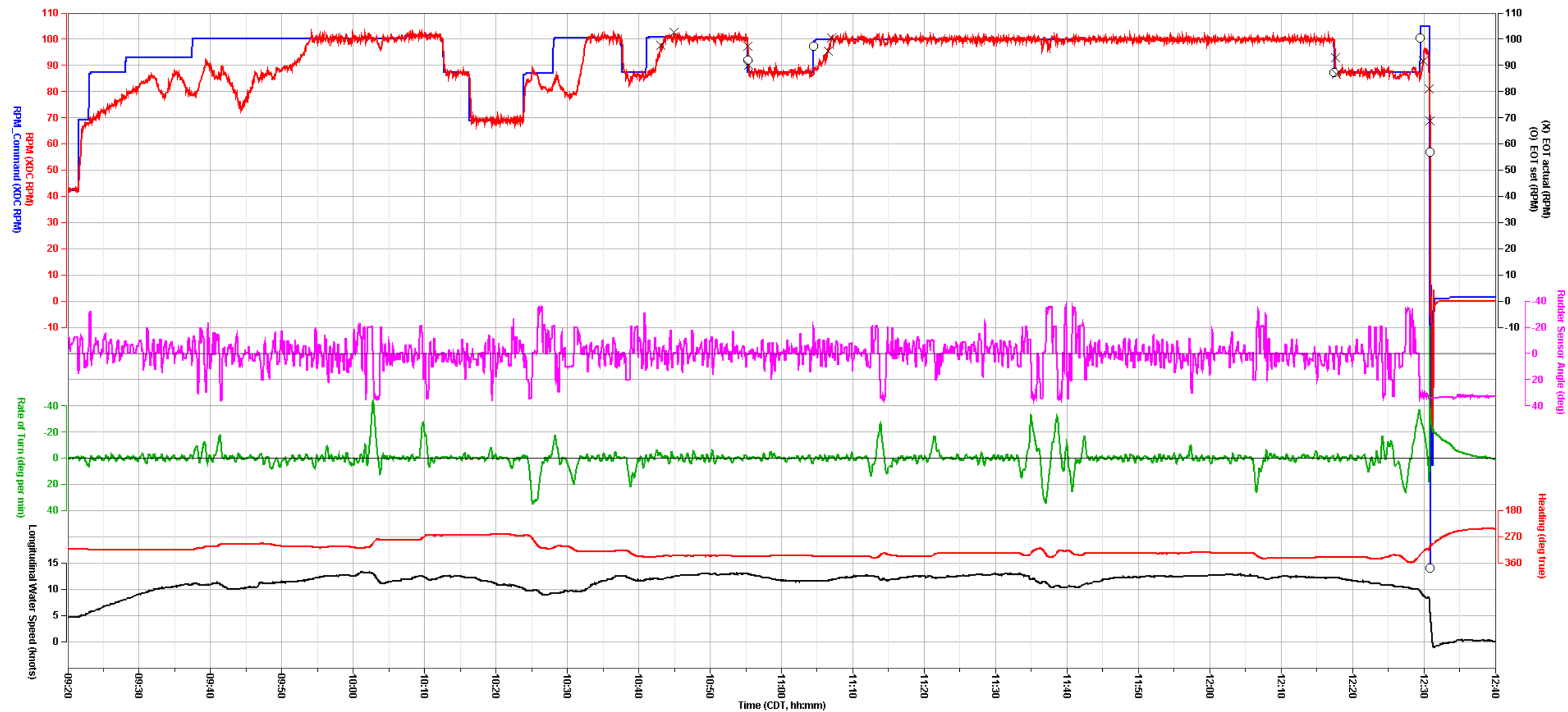


Figure 11. Conti Peridot parameters, day of accident, ten minutes prior to collision

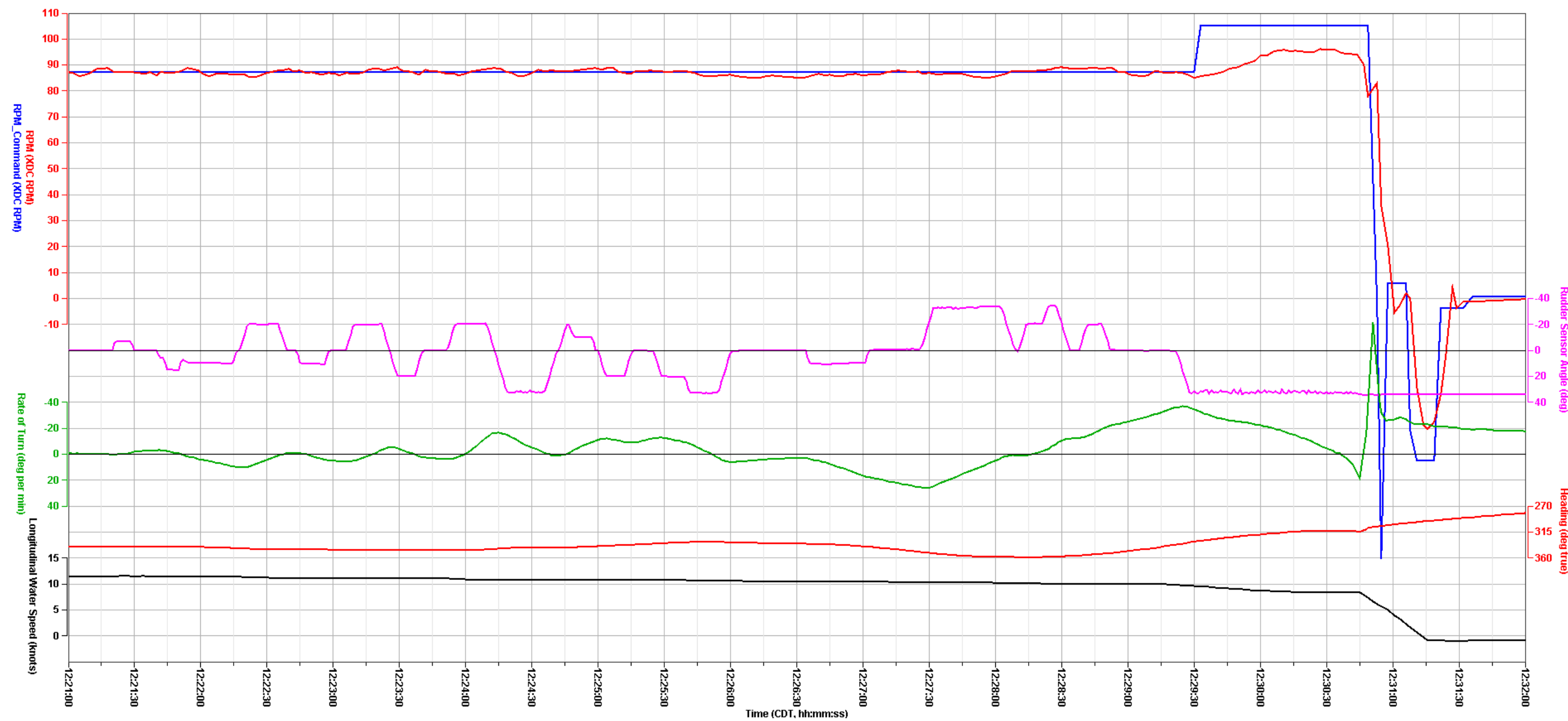


Figure 12. Conti Peridot parameters with transcript overlay, day of accident, ten minutes prior to collision

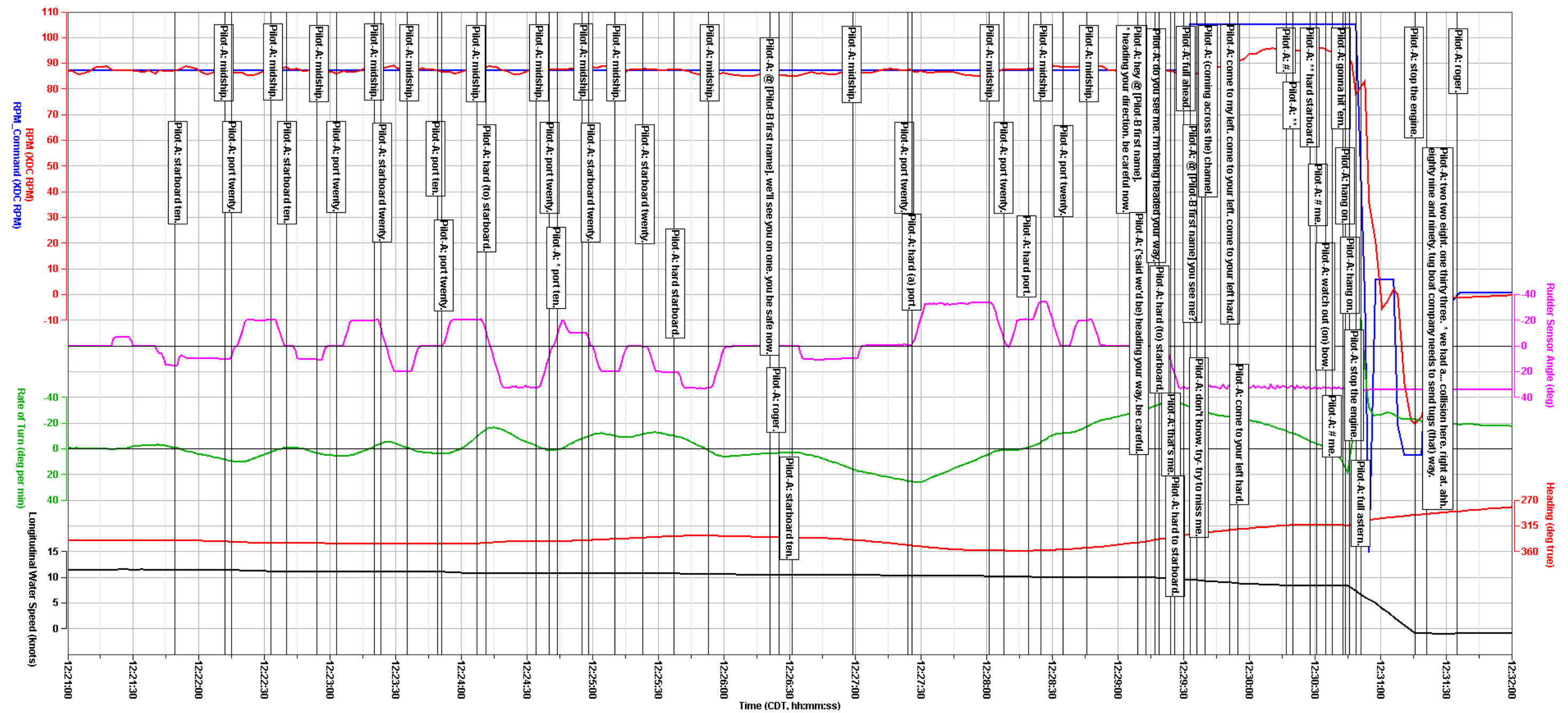
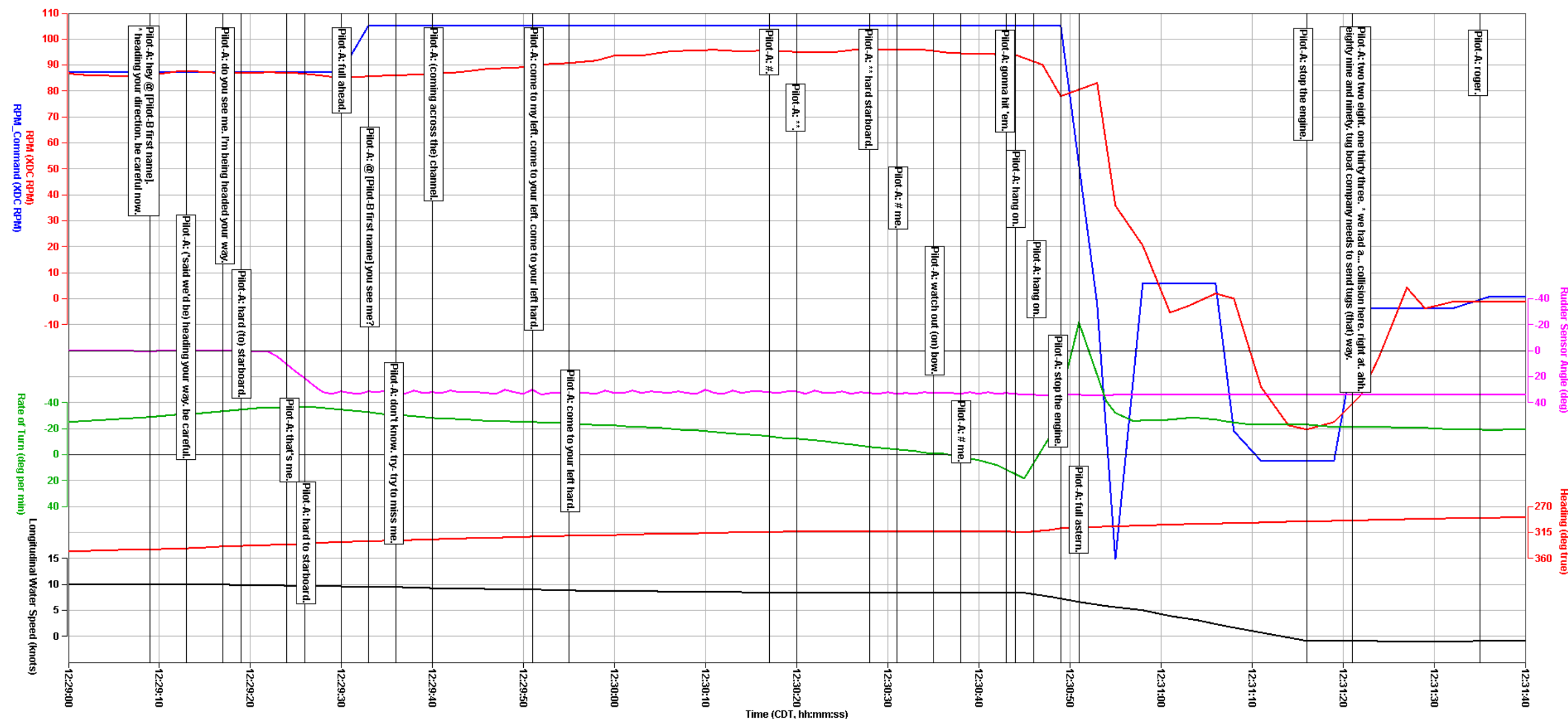


Figure 13. Conti Peridot parameters with transcript overlay, day of accident, two minutes prior to collision



1.3 Partial Transcript – Audio Summary

An hour prior to the collision between Conti Peridot and Carla Maersk, inbound Conti Peridot encountered two outbound vessels in the Houston Ship Channel, separated by about 1.5 nautical miles. This addendum expands upon the VDR group transcription of Conti Peridot. Approximately 14 minutes of additional recorded bridge audio from the Conti Peridot is partially transcribed, including its passage of two oncoming vessels, Karoline N and Stolt Span.

A partial transcript of intelligible audio from the pilot aboard Conti Peridot is presented in this addendum. Audio from the helmsman, captain, VHF radio transmissions, and unintelligible conversations, are not necessarily included in this partial summary.

As indicated in Table 2 of the original report, the audio quality of VDR recordings from Conti Peridot ranged from poor to good. Table 6 summarizes the timing of events related to the accident; events uniquely noted in this addendum are preceded with an asterisk.

Table 6. Expanded timeline of events

Event	Conti Peridot	Carla Maersk
VDR recording starts	23:57 (March 8, 2015)	05:01 (March 8, 2015)
Pilot enters bridge	09:34	09:07
Vessel underway	08:05	09:55
* VDR Partial transcription starts	11:28	
* Conti Peridot passes oncoming vessel, Karoline N	11:35	
* Conti Peridot passes oncoming vessel, Stolt Span	11:39	
* VDR Partial transcription ends	11:42	
VDR transcription starts	12:00	12:06
Collision		12:30
VDR transcription ends	12:31	12:32
VDR recording ends	12:57	12:55

Note: Unless otherwise indicated, all events occurred on March 9, 2015.

All times are approximate. Time indicated is CDT (HH:MM).

Voyage Data Recorder – Addendum 1

Voyage Data Recorder Partial Transcript

A partial transcript from 1128 to 1142 was prepared for the bridge audio from the Conti Peridot. The following partial transcript represents intelligible audio from the pilot aboard Conti Peridot for the duration of transcription.

LEGEND

Pilot-A	Voice identified as the pilot aboard Conti Peridot
VHF-?	VHF radio transmission from source other than Conti Peridot
*	Unintelligible word(s)
@	Non-pertinent word
()	Questionable insertion
[]	Editorial insertion

Note 1: Times are expressed in central daylight time (CDT).

Note 2: Words shown with excess vowels, letters, or drawn out syllables are a phonetic representation of the words as spoken.

Note 3: A non-pertinent word, where noted, refers to a word not directly related to the operation, control or condition of the vessel.

Note 4: Unintelligible conversations and comments on the bridge are not transcribed.

Conti Peridot Bridge Audio

March 8, 2015 23:57:00

----- **START OF RECORDING** -----

March 9, 2015 11:28:00

----- **START OF PARTIAL TRANSCRIPT** -----

11:28:10

Pilot-A three two seven.

11:28:17

(Pilot-A) yes sir.

11:28:20

Pilot-A * one two three. four five.

11:31:03 (g'morning @ [first name of pilot aboard another vessel]. one bell). (be safe be safe).

(Pilot-A) [VHF transmission]

11:31:07

VHF-? okay. we'll see you (on) one.

11:33:09

Pilot-A starboard ten.

11:33:33

Pilot-A midship.

11:33:36

Pilot-A port ten.

11:33:39

Pilot-A ** (port twenty) **

11:33:47

Pilot-A midship.

11:34:02

Pilot-A port ten.

11:34:09

Pilot-A port twenty.

11:34:23

Pilot-A midship.

11:34:32

Pilot-A port ten.

11:34:55

Pilot-A midship.

11:34:57

Pilot-A starboard twenty.

11:34:59

Pilot-A hard to starboard.

11:35:22 (@ [first name of pilot aboard another vessel]). go ahead.

Pilot-A [VHF transmission]

11:35:24

VHF-? ** on one.

Conti Peridot Bridge Audio

11:35:25 * on one.(sounds) good * be safe.
Pilot-A [VHF transmission]

11:35:44
Pilot-A midship.

11:36:00
Pilot-A starboard twenty.

11:36:05
VHF-? (all right uhh) ** port side **.

11:36:14
Pilot-A hard starboard.

11:36:34
Pilot-A midship.

11:37:01
Pilot-A hard port.

11:37:12
VHF-? (are) you all right?

11:37:13 ** coming back (to my right **).
Pilot-A [VHF transmission]

11:37:53
Pilot-A midship.

11:38:02
Pilot-A port twenty.

11:38:26
Pilot-A midship.

11:38:37
Pilot-A hard (to) starboard.

11:38:52
Pilot-A midship.

11:39:03
VHF-? (i see you there.)

11:39:04 roger.
Pilot-A [VHF transmission]

11:39:19
Pilot-A midship.

11:39:32
Pilot-A hard to starboard.

11:39:35
Pilot-A midship.

11:39:36
Pilot-A hard to port.

11:39:52
Pilot-A midship.

Conti Peridot Bridge Audio

11:39:58
Pilot-A starboard twenty.
11:40:01
Pilot-A hard to starboard.
11:40:12
Pilot-A midship.
11:40:24
Pilot-A starboard twenty.
11:40:37
Pilot-A midship.
11:40:41
Pilot-A hard port.
11:41:09
Pilot-A midship. **
11:41:13 (thank you **) appreciate that.
Pilot-A [VHF transmission]
11:41:51
Pilot-A port twenty.

March 9, 2015 11:42:00
----- **END OF PARTIAL TRANSCRIPT** -----
March 9, 2015 12:00:05
----- **START OF TRANSCRIPT (refer to original report)** -----
March 9, 2015 12:31:36
----- **END OF TRANSCRIPT (refer to original report)** -----
March 9, 2015 12:57:00
----- **END OF RECORDING** -----